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Additions to the taxonomy of the armadillo ants (Hymenoptera, Formicidae, *Tatuidris*)

DAVID A. DONOSO
Graduate Program in Ecology and Evolutionary Biology, Department of Zoology, University of Oklahoma, Norman, OK 73019, USA. Museo de Zoología QCAZ, Escuela de Ciencias Biológicas, Pontificia Universidad Católica del Ecuador, Aptdo 17-01-2184, Quito, Ecuador.
E-mail: david.donosov@gmail.com

Abstract

The taxonomy of the rare ant genus *Tatuidris* is revised by studying morphological variability among 118 specimens from 52 collection events in 11 countries, and sequences of Cytochrome Oxidase 1 (CO1 'DNA barcodes') of 28 specimens from 13 localities in 6 countries. *Tatuidris* are cryptic ants that inhabit the leaf litter of Neotropical forests from Mexico to French Guiana, central Brazil, and Peru. Based on the extent of the morphological variability encountered throughout this broad geographic range, *T. kapasi* is relegated to junior synonymy under *T. tatusia*. Analysis of barcodes indicated a pattern of genetic isolation by distance, suggesting the presence of a single species undergoing allopatric differentiation. The genus *Tatuidris*, thus, remains monotypic. Male and female reproductive castes are described for the first time.

Introduction

The ant genus *Tatuidris* comprises cryptic ants that inhabit the leaf litter in the Neotropics (Brown and Kempf 1968). Workers of *Tatuidris* present a distinctive morphology (Figure 1), consisting of a shield-like head with a broad vertex, ventrally-turned heavy mandibles which do not overlap at full closure, deep antennal scrobes with eyes at or close to their apex, compact and fused mesosoma, 7-segmented antenna, first gastral segment ventrally directed, and unique among ants—an antenna socket apparatus sitting upside down on the roof of the expanded frontal lobe (first described in Keller 2011, see his figures 12B and 12C). These characteristics, combined with a thick integument and a generally rounded habitus, are reminiscent of armadillos. Both "tatuidris" and "tatusia" mean "armadillo" (Brown and Kempf 1968) which is the common name for this genus (Lacau *et al.* 2012).

Taxonomy summary

Brown and Kempf (1968) described the genus *Tatuidris* to contain the newly described species *tatusia*. Due to morphological similarities, they included *T. tatusia* in what was then a myrmicine tribe, the Agroecomyrmecini. The tribe also includes two fossil genera, *Agroecomyrmex* Wheeler from the Baltic amber [44.1 Million years (Myr) ago] and *Eulithomyrmex* Carpenter from the Miocene Florissant Shale of Colorado in North America (34 Myr ago; Carpenter 1930, 1935; Moreau and Bell 2011). Since the original description, the systematic status of the tribe has been the focus of intense debate. Due to similarities in the habitus, Brown and Kempf (1968) linked *Tatuidris* to the Dacetini genus *Glamyromyrmex* (currently a junior synonym of *Strumigenys*) and *Phalacromyrmex*. However they concluded: "analysis of these similarities indicates […] that they are mostly convergent and not based on close phylogenetic relationship" (Brown and Kempf 1968:183). Further work explored the similarities of *Tatuidris* with *Ishakidris* (Bolton 1984) and *Pilotrochus* (Brown 1977). While these taxa share some characteristics, including an expanded head vertex, deep antennal scrobes and a compact mesosoma, the similarities were again deemed convergent (Bolton 1984).

Bolton (2003) was the first to suggest the taxonomic instability of *Tatuidris* within Myrmicinae and raised the genus to the level of a new subfamily, the Agroecomyrmecinae. This assessment was based on the following diagnostic characters: 1) large mandibles with mandibular masticatory margins that oppose at full closure but do

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